



News from the Savannah River National Laboratory

Media Contact: Angeline French
(803) 725-2854
angeline.french@srnl.doe.gov

FOR IMMEDIATE RELEASE

SRNL SUPPORTS NATION'S NUCLEAR ENERGY RESEARCH AND DEVELOPMENT



*Tracy Rudisill leads
SRNL's project in support
of the DOE Advanced
Fuel Cycle Initiative*

AIKEN, S.C. (August 28, 2008) – A project led by the Savannah River National Laboratory has been selected by the U.S. Department of Energy to support the Advanced Fuel Cycle Initiative (AFCI), the Department's nuclear energy research and development program. DOE will award funding to the SRNL-led project, along with just 19 others selected through a rigorous review of more than 300 competitive and innovative applications received from universities, national laboratories and industry. The selected projects will provide necessary data and analyses to further U.S. nuclear fuel cycle technology development, meet the need for advanced nuclear energy production and help to close the nuclear fuel cycle in the United States.

SRNL and its partner, Augusta State University, will study a proposed change to the Uranium Extraction (UREX) process that recovers uranium and technetium from spent nuclear fuel. By preventing the formation of an acid that could otherwise contaminate solutions recycled to the process, this change is expected to reduce the volume of waste from the UREX process that must be treated and dispositioned. The undergraduate research program at Augusta State will synthesize the compound to be tested and demonstrated by SRNL.

Awarding funding to these new AFCI projects will “accelerate our nation's drive towards diverse and sustainable domestic sources of energy,” Assistant Secretary for Nuclear Energy Dennis Spurgeon said. “Developing nuclear fuel cycle technology is essential to ensure that the United States can continue to rely on safe and secure nuclear power to meet our energy needs, while also addressing nuclear waste and proliferation concerns.” The one-year awards range in value from \$200,000 to \$2,000,000 and will support the efforts of university, national laboratory, and industry researchers to develop the technologies necessary to close the nuclear fuel cycle.

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This announcement adds up to \$15 million to the more than \$343 million DOE has already provided to universities, national labs and industry since AFCI was first funded in 2004. As part of President Bush's Advanced Energy Initiative, AFCI aims to accelerate development and deployment of advanced fuel cycle technologies to encourage clean energy development, responsibly manage nuclear waste, and reduce the risk of nuclear proliferation.

Flowsheets developed for the recovery of actinide materials from spent nuclear fuel by the AFCI utilize the UREX process to separate uranium and technetium from the transuranic elements and remaining fission products. To prevent the extraction of plutonium and neptunium into the solvent, the process uses a dilute nitric acid scrub stream containing acetohydroxamic acid (AHA). When the AHA in the UREX scrub stream contacts nitric acid, the compound begins to decompose, forming acetic acid and hydroxylamine nitrate (HAN). The HAN easily decomposes to gaseous products and water in nitric acid, but a significant amount of the acetic acid will persist in the nitric acid transferred to the acid recovery system. If the acetic acid is not removed or destroyed prior to acid recovery, it will contaminate the products from the recovery system.

This project will evaluate the use of formohydroxamic acid (FHA) as a replacement for AHA in the UREX process. The use of FHA in the UREX process has a distinct advantage over AHA since both of its decomposition products (HAN and formic acid) readily decompose to gaseous products and water. Therefore, the use of FHA in the UREX process will reduce the volume of waste that must be treated and dispositioned.

SRNL is DOE's applied research and development laboratory at the Savannah River Site (SRS). SRNL puts science to work to support DOE and the nation in the areas of national and homeland security, energy security and environmental management. The management and operating contractor for SRS and SRNL is Savannah River Nuclear Solutions, LLC.

See the DOE news release at: <http://www.doe.gov/news/6446.htm>

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